FLIGHT

The AIRCRAFT ENGINEER & AIRSHIPS

First Aero Weekly in the World.

Founder and Editor : STANLEY SPOONER

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Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list :

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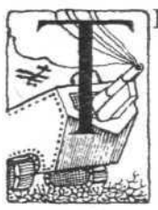
Jan. 11	**Juvenile Lecture, "Testing Model Seaplanes," by R. A. Frazer, before R.Ae.Soc.**
Jan. 12	**Discussion, "Gliding and Gliders at Itford," at I.Ae.E.**
Jan. 18	**Lecture, "Flying Boats," by Maj. J. D. Rennie, before R.Ae.Soc.**
Jan. 26	**Lecture, "Wind Tunnel Work at the N.P.L.," by W. L. Cowley, before I.Ae.E.**
Feb. 6–7....	**Third Air Conference at the Guildhall**
Feb. 9	**Lecture, "Seaplane Design," by W. O. Manning, before I.Ae.E.**
Feb. 23	**Lecture, "Aerofoils," by Dr. A. P. Thurston, before I.Ae.E.**
Mar. 15	**Entries close for Dutch Height Indicator Competition.**
Apl. 12	**Lecture, "Some Controversial Points in Aircraft Design," by F. T. Hill, before I.Ae.E.**
May 11	**Lecture, "Experimental Flying," by Maj. M. E. A. Wright, before I.Ae.E.**
June 25–30	**International Air Congress, London**
June 30	**R.A.F. Aerial Pageant**
Aug. 6–27	**French Gliding Competition, near Cherbourg**
Dec. 1	**Entries close for French Aero Engine Competition**
1924	
Mar. 1	**French Aero Engine Competition.**

EDITORIAL COMMENT.



THE *Morning Post*, taking the very able review of Civil Aviation given by General Sir Sefton Brancker at a luncheon of the London Commercial Club recently, as an opportunity to renew the old and, we had thought, discredited argument in favour of a separate Naval Air Service, uses certain arguments which we cannot allow to pass unchallenged. In his review, General Brancker very rightly pointed out that the air services to Paris and Brussels were of very little commercial use. Those to Berlin and Cologne were better because they went farther, but, in order to reap full benefit of air transport, we had to go farther still. The *Morning Post* professes to have some doubts as to the soundness of this argument, saying "It seems to us that it is equally probable, at least, that the longer the journey the less profitable the enterprise."

At it Again

We should have thought that by now it would be obvious to anyone who professes to take any interest at all in commercial aviation that the longer the distances over which air services are operated the better the prospects of commercial success. In fact, we cannot believe that the *Morning Post* seriously doubts the truth of the statement. The reason, or one of the chief reasons, why the London-Paris service is not more extensively used is precisely that it is rather short and is already extremely well catered for by excellent train and boat services. Thus, in the case of mails, the saving in time effected by air mails is so small as to be of little value. But in the case of the Cairo-Baghdad air mails the saving in time is very great, amounting on occasion to several weeks. Here the use of the air mail is a very definite advantage, and in this connection it is worthy of note that the Baghdad air mail is used very extensively.

The reasons why the saving in time over long distances is much greater than over short distances are, of course, quite obvious. A certain amount of time is spent in getting from the city to its aerodrome, and again at the other end time is wasted getting from the aerodrome to the city. Assume, for the sake of argument, that these two journeys take

half-an-hour each. The actual time of the whole journey is then increased by one hour. If now, the distance between the two aerodromes is relatively short, it is obvious that the saving in time, from one city to another, is but small compared with the ordinary train and boat services.

That the cost of air traffic depends to a very large extent on the volume of the traffic cannot be disputed. There are a number of overhead charges which cannot be reduced below a certain minimum, and the smaller the amount of traffic, the greater the cost per passenger or per pound of freight carried. Only by increasing the volume of traffic can we hope to reduce the cost, and it has already been shown that the traffic can only be increased by offering such a saving in time as will make the use of air transport really worth while, *i.e.*, over long distances.

The *Morning Post* then goes into the question of why we are subsidising commercial aviation, assuming that it must be for military reasons, and venturing the opinion that civilian pilots would be of very little use. In this connection, we may point out that, as a matter of fact, there is no reason whatever to believe that the commercial pilot would be inefficient for war flying. Thus, there is not a great deal of difference between piloting a machine full of passengers from London to Cologne and piloting the same or a very similar machine filled with bombs to some enemy town. But, apart from that, maintaining commercial air services has the very great advantage that it enables us, at relatively low cost, to keep our designers and constructors at work, whereas if military machines only were being built, the cost to the country would be very much greater, in fact would be impossible under present conditions of financial stringency. Add to that the probability that some day commercial aviation will be able to fly without subsidy—as undoubtedly it will—and it will be seen that the keeping alive of commercial aviation, at what is, after all, but a trifling cost to the taxpayer, combines several very desirable features. It provides work for our factories, enabling them to keep a designing staff together. It provides rapid communication between various parts of the Empire, and thus gives the community increased transport and commercial facilities, and it promises some day to do these things with little or no extra demand upon the taxpayer's money.

With regard to the " case " put up by the *Morning Post* for a separate air service for Navy and Army, the excuse for this sudden attack seems about as logical as the remarks of the young lover in one of Wodehouse's priceless stories, who remarks: " Talking about earwigs, have you ever been in love ? "

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Watch America

To those who follow at all closely the progress in aviation, the enormous steps made recently by the United States in the matter of sporting aviation cannot have failed to impress by their significance. Although America was the country which gave flying to the world, it was nevertheless the fact that never, after other countries commenced to take up aviation, did America approach again to the leading position which the work of the brothers Wright should have given her. During the War, America built machines mainly to designs supplied by France and England. Since the War, with the exception of some very successful air mail services, America at first did very little in the matter of commercial aviation, due chiefly to the lack of uniformity in the air legislation of the various states of the union. Recently, however, America has leapt to the very front rank in sporting aviation, and, whatever pessimists may think, such performances have a very great effect on the prestige of a country. A couple of years ago, France was the only country in which international speed races of any importance were held annually. Then America decided to hold her Pulitzer race, and at once several very fast machines were produced. In last year's Pulitzer a number of machines were entered by the Navy and Army air services, and what has been the immediate result ? All the world's speed records have passed to the United States. Lieut. Maughan, on an Army-Curtiss, is the holder of the world's speed record over 100 and 200 kms.—records previously held by Brac Papa and Kirsch respectively. The world's speed record over 1 km. is now held by General Mitchell, Chief of the Army Air Service, after having stood to the name of French pilots for more than 10 years. The world's altitude record is also held by an American Pilot—Lieut. MacReady.

It is all very well to say that these are but sporting efforts and " cut no ice." They do cut a very great deal of ice. When other nations are contemplating the purchase of machines, they will, undoubtedly, turn to the country which holds nearly all the world's records, other things being equal, as the mathematicians say. Not only so, but in the process of designing, building and flying these record-breaking machines America is learning a very great deal, which can be and will be incorporated in other designs, either of military or commercial nature. Thus both aerodynamically and constructionally progress will be made, which will further increase the prestige of her aviation industry.

The question now arises, how did this sudden leap into the very front rank of sporting aviation come about ? We think the answer can only be : Because America's air services supported, by direct orders to constructors and participation in the race, sporting events. In this country, R.A.F. pilots are allowed to fly in sporting events, but there is always the feeling that " it really isn't done, don't you know," and as for the participation of Service machines, there is a general holding up of hands and shaking of heads. " Air Ministry machine, you know," " Government property," " Might get smashed," and so forth. Isn't it time we reconsidered the whole position, and tried to learn a little from our more broad-minded cousins across the " Pond " ?

An Irish Air Force with the New Year

ACCORDING to the *Derry Journal*, recruiting began in Dublin on January 1 for infantry units of the Volunteer Reserve of the National Air Force, and about 50 volunteers were dealt with in Brunswick Street during the day. The National Air Service is being organised as a thoroughly efficient unit, under the direct control of the Commander-in-Chief of the National Army and the Army Council, and having as its head Commandant-General MacSweeney, with Lieut.-Commandant Eamon O'Broite and other officers. The headquarters of the Service will be Baldonnell, the well-equipped aerodrome there having passed from the British to the Irish authorities. It is understood that " D.H." type machines will be used in the Irish Air Force, and it is probable that parts of these machines will be assembled over in Ireland.

FLIGHT

THE PARIS AERO SHOW 1922

By THE TECHNICAL EDITOR

(*Continued from page* 8.)

HYDRAVIONS F.B.A., ARGENTEUIL (S. AND O.)

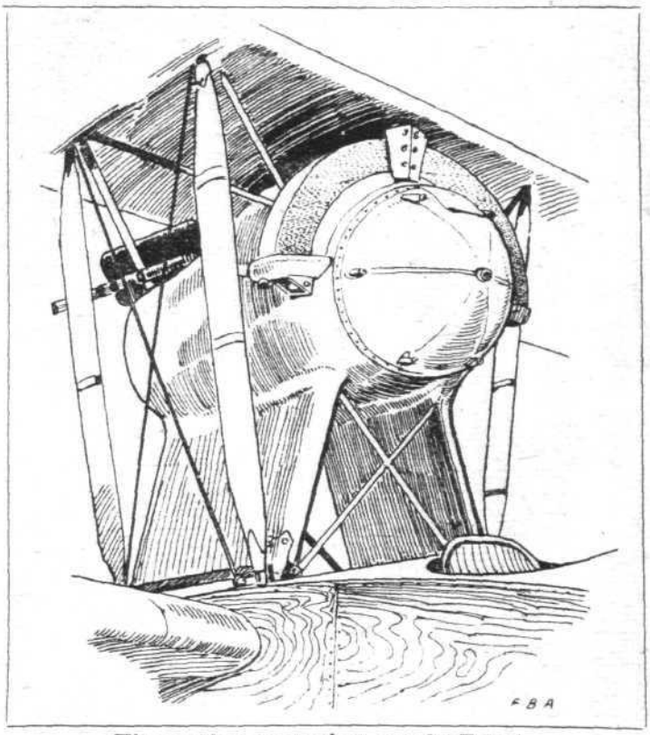
FORMED originally by Lieut. Conneau, who under the name of M. Beaumont won the first circuit of Britain, after a hard fight against Jules Vedrines, the Franco-British Aviation Co., whose managing director now is M. Louis Schreck, has been engaged upon the construction of flying boats for a greater number of years than probably any other French firm. During the War, this country had in service a considerable number of F.B.As., which will still be remembered by all who served in the old R.N.A.S.

The machine shown this year bears a strong family resemblance to earlier types, but the boat hull does not show that "scorpion tail" cocked-up appearance which was so characteristic of the older F.B.A. machines. As a dual control school machine, the F.B.A. "16 H.E.–2" is not remarkable for any original features, having been designed to be easy to fly and to "put down."

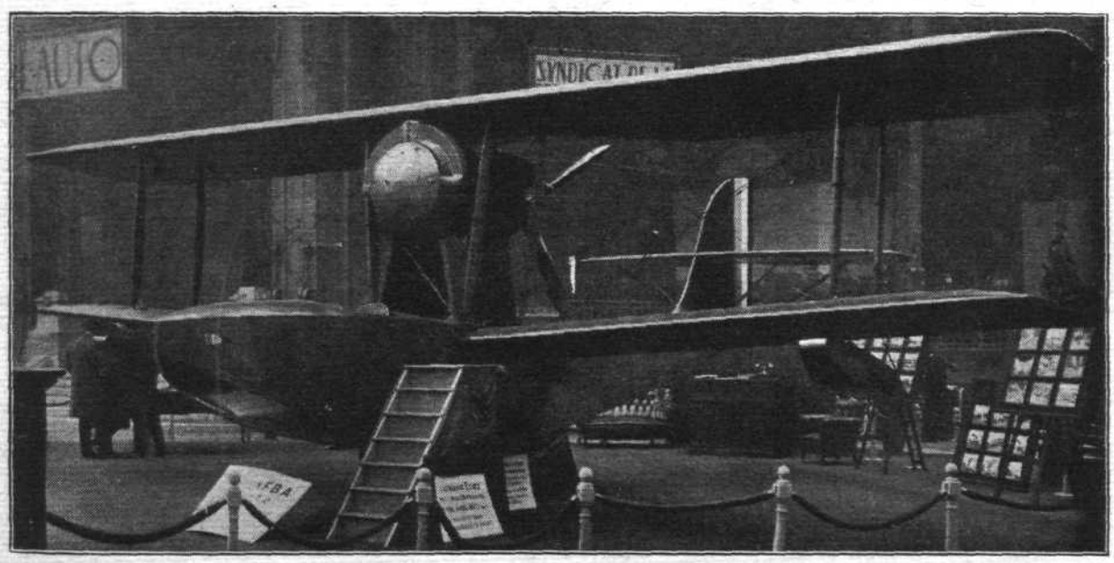
The boat hull shows the usual F.B.A. flat sides, ply-wood-covered, and has a single step well aft of the centre of gravity. In the nose the hull has a slight V-bottom, but this gradually disappears until, at the step, it is actually slightly concave, after the fashion popular in Italy. Aft of the step, the bottom is again of V-shape, flattening out towards the stern.

The seats for pupil and instructor are placed side by side, some distance ahead of the lower plane. The controls, seats, etc., are mounted on a framework, forming a unit separate from the main boat hull.

The wings are of usual biplane type, but are of considerably greater thickness than were those of the old F.B.As., in which there was none too much room for spars. The top plane is in one piece, while the two halves of the lower wing are attached to the sides of the boat, and are set at a pronounced dihedral angle. Centre-section struts springing up from the deck of the boat, and sloping outward slightly



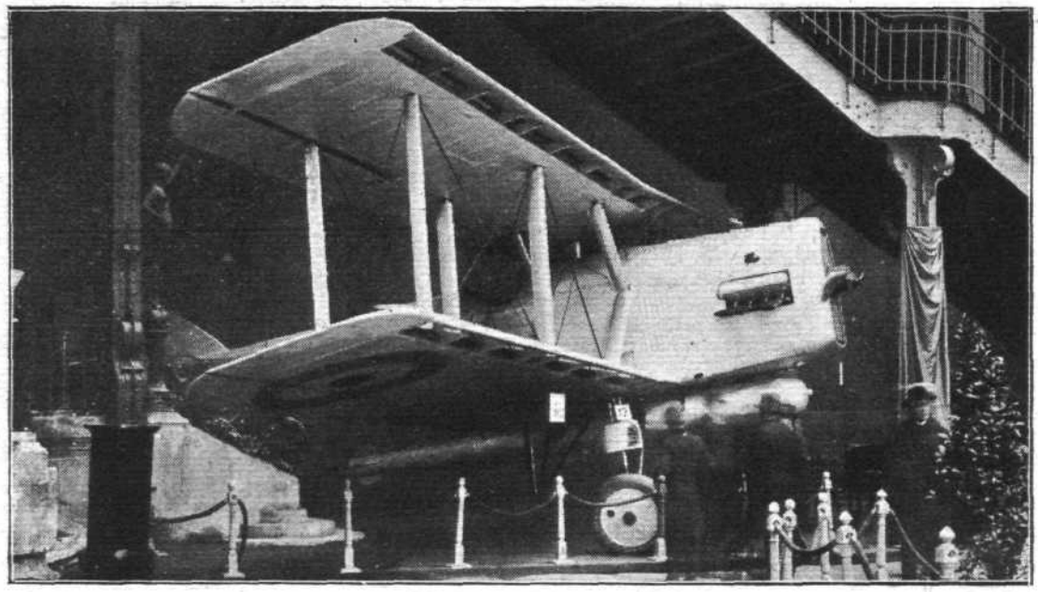
The engine mounting on the F.B.A.



The F.B.A. Flying Boat: Three-quarter front view.

carry the middle portion of the top plane, quite independently of the engine mounting, and there is but one pair of inter-plane struts on each side.

The 140 h.p. Hispano-Suiza engine is enclosed in a wooden "power egg" of good streamline shape, the engine being carried on a pair of "trouser" struts from the deck of the boat. A radiator of curious shape straddles the engine housing, as shown in our sketch. The main characteristics of the F.B.A. "16 H.E.-2" are as follows:—Length over all, 9·2 ms. (30 ft. 2 ins.); span, upper plane, 11 ms. (36 ft. 1 in.); span, lower, 10·4 ms. (34 ft. 1 in.); wing area, 34 sq. ms. (366 sq. ft.); weight, empty, 1,020 kgs. (2,240 lbs.); useful load, 270 kgs. (595 lbs.); total loaded weight, 1,290 kgs. (2,835 lbs.); speed, at 200 ms. 140 kms. (87 miles) per hour; landing speed, 53 m.p.h.; climb to 6,000 ft. in 26 mins.



The Handley Page "Hanley."

HANDLEY PAGE, LTD., CRICKLEWOOD

As already mentioned, the only British machine exhibited at the Paris Aero Show—the Handley Page "Hanley" Torpedo 'plane, with slotted wings—was greatly handicapped, owing to being placed in an unfavourable position under the gallery. Nevertheless, most of the general public, and certainly all the representatives of foreign Governments who visited the Show, ultimately found their way to the Handley Page stand, and were greatly interested in the unusual design. Incidentally an interesting comparison was afforded by the Pierre Levasseur Torpedo 'plane, which is somewhat similar to the Blackburn "Swift." Although considerably smaller than the P. Levasseur machine, the "Hanley" lands much slower, and, as a matter of fact, we believe that it is intended further to reduce the wing area, as the landing speed is lower than it need be. The "Hanley" will then be an extraordinarily small machine for the load it carries—an important consideration for a machine to be housed on board a ship.

As regards details of the "Hanley," a very full description, illustrated by scale drawings, sketches and photographs, was published in our issue of November 30, 1922, and consequently there is little need to repeat the description here. Suffice it to place on record that the machine was exhibited, and that the slotted wings and *ailerons* attracted a great deal of attention from those who follow closely the latest developments in aeronautics. It is now generally realised that sooner or later the slotted wing is bound to play an important part in aviation developments, although at the present time it must be considered to be mainly in the experimental stage. Future progress will be mainly a matter of full-scale research and experiment, which cost a great deal of money, and it may be some time yet before the full advantage of the slotted wing discovery is realised. In the meantime, it may be stated that, in addition to the "Hanley," several other types are now being produced at Cricklewood, although no detailed reference to them is permissible at the moment.

HANRIOT ET CIE., NEUILLY-SUR-SEINE

OF the two machines exhibited on the Hanriot stand, the "H.D.14," type 1923, is a school biplane with dual controls of the "type debrayable," patented by Hanriot, and in which the instructor can, at any moment, disconnect the pupil's controls should this be required in case of a serious mistake on the part of the latter. The machine is mainly similar to previous Hanriot school machines, of which several have been exhibited at previous Paris Shows, and does not therefore call for any comment. It is, however, of interest to recall that it was on a similar machine that Thoret recently "glided" for over 7 hrs. at Biskra, with his engine stopped. In view of this fact, the main characteristics of the machine are given below, from which it will be seen that if such a machine can glid for 7 hrs. on the upward currents, ordinary gliders, lightly loaded, should have no difficulty in reaching considerable heights and in remaining up for a whole day should the pilot desire to do so.

The main characteristics of the Hanriot "H.D.14" are as follows:—Length, 23 ft. 10 ins.; span, 31 ft. 11 ins.; wing area, 340 sq. ft.; total loaded weight, 1,780 lbs.; wing loading, 5·25 lb./sq. ft.; engine, 80 h.p. le Rhône; power loading, 22·3 lb. h.p.

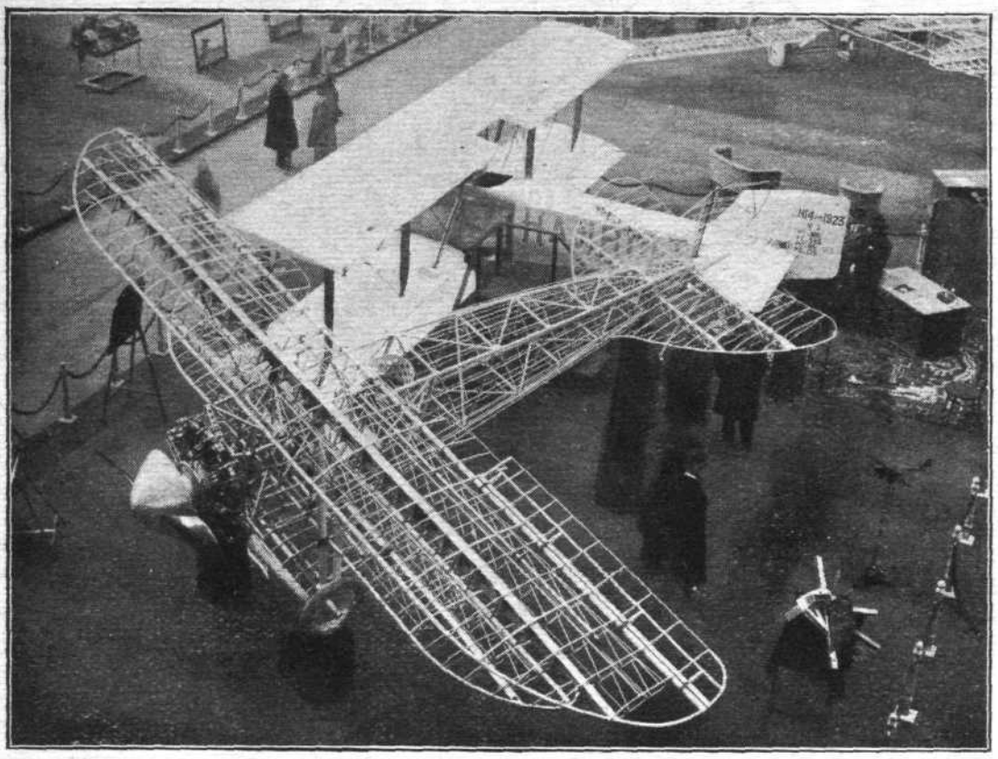
The second machine shown on the Hanriot stand is an all-metal chaser, single-seater, with 260 h.p. Salmson engine, type Cu. Z. 9. The machine is shown in skeleton, so that the detail construction can be thoroughly inspected.

With the exception of a few fittings of steel, the Hanriot "H.26" is built entirely of Duralumin, this metal being used mostly in the form of channel-sections.

The *fuselage* is constructed of four main channel-section Duralumin *longerons*, formed into a Warren girder by channel-section struts which entirely triangulate the structure. The *longerons* have their open sides facing towards one another, as regards the side panels. Thus, the struts of the sides fit into the channels top and bottom, while the horizontal struts are attached to the *longerons* by gusset plates and rivets. The main structure is of rectangular section, turned into a streamline shape by light channel-section stringers and formers, built on to the main structure as indicated in our sketches.

Also built entirely of Duralumin are the wings, of which the lower is quite small, the machine belonging to the "sesquiplan" type, now so popular in France. The wings are remarkable for the fact that they have but a single spar, although tubular leading edges and false rear spars assist materially in stiffening the structure. Light channel-section stringers and diagonal members serve to brace the wing structure, there being no internal drag bracing of the usual type. It appears probable that this form of bracing has been chosen in order to attain, at the same time as providing the drag bracing, a certain amount of stiffening against torsion, the single spars being probably somewhat inadequate in this respect.

In the case of the lower wing, the single main spar is in the form of a Duralumin tube of rectangular section, with, of course, the corners rounded-off. The tubular leading edge is attached to the long strut of the undercarriage and to the lower *longerons*, while the false rear spar, also a Duralumin tube, is supported from the lower *longerons*. All the main attachments of these spars to chassis or *longerons* are in the

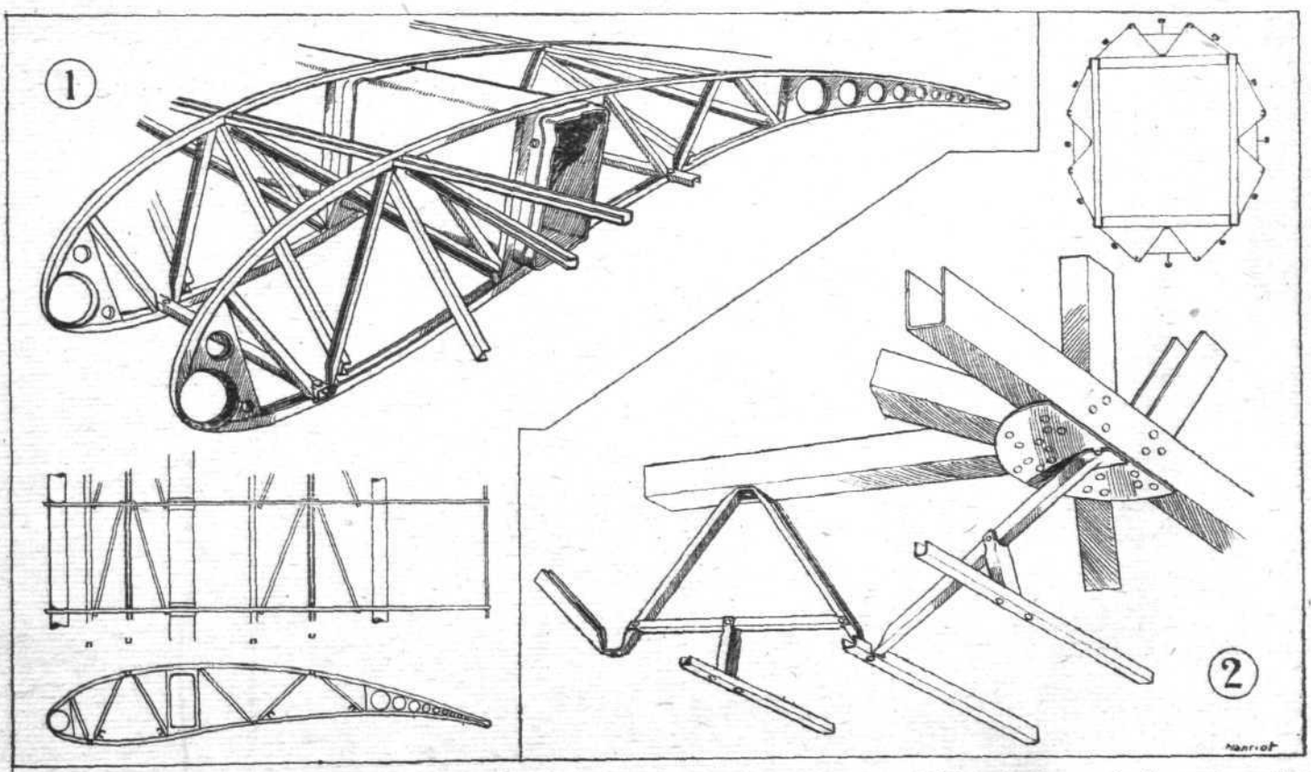


The Hanriot all-metal biplane : This view, taken from above, gives a good idea of the single-spar wing construction. Both in the fuselage and wings, channel section Duralumin is used extensively.

form of sheet steel fittings, some of which are of somewhat complicated shape, but all of which appear extremely well-made, and, like the rest of the machine, beautifully finished. The lower main spar is attached, also by a sheet steel fitting, to lower *longeron* and the junction of two of the under-carriage struts with the *fuselage*.

The upper plane, which is of much larger span and chord than the lower, is of similar construction, with the exception that the main spar, placed fairly far aft in the Schoukowsky aerofoil, is not a one-piece Duralumin tube, but is built-up of sides stamped out to form an N-girder, riveted to flat top and bottom flanges. In stamping-out the lightening pieces of the spar sides, these are given a slight curvature, so that the " legs " of each " N " are in section like a very shallow trough. Each side of a spar appears to be in one piece, stamped out of a single strip of Duralumin.

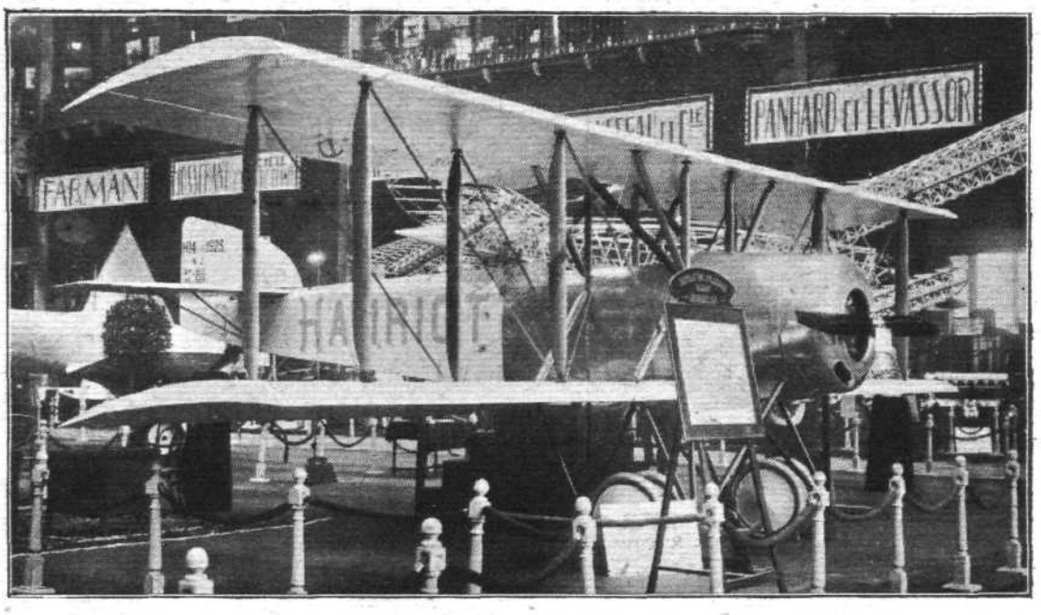
The ribs of both top and bottom plane are built up in the form of a Warren girder, the material used being light Duralumin of channel-section. *Ailerons* are fitted to top plane only, and are operated by a system of tubes, chains



SOME HANRIOT DETAILS : Fig. 1 shows a small portion of the lower plane, which is built up of channel-section ribs and stringers over rectangular section Duralumin tube spars. In the inset is shown the system of triangulation which takes the place of internal drag and torsion bracing. Fig. 2 shows the fuselage construction which is of channel-section Duralumin for longerons and triangulating struts. A number of light stringers are added to the main structure, as shown in the inset.

and sprockets. The leading edge of the *aileron* is a rectangular section Duralumin tube.

The wing bracing of the Hanriot "H.26" is unusual, inasmuch as it does not incorporate any struts, although the wings are not entirely cantilever beams on account of a single lift wire, running from the rear strut of the undercarriage to the top plane, passing *en route* to a fitting over the lower plane main spar. Both this fitting and the corresponding one on the top plane are of sheet metal. It is stated that the factor of safety on the wings is 12, loaded in the normal way. As regards torsional stresses and down loads such as may occur during a nose drive, the factor of safety may be considerably smaller, although this form of construction, with but single spars, has been used on the Hanriot "H.D.15" with, so far as we are aware, good results. That machine had, however, interplane struts to assist in resisting torsional stresses. To a certain extent, the fact that leading edge and false rear spar are secured to the *fuselage* should help matters, although, in view of the relatively small width of the *fuselage*, these points lie fairly close together and a long way from the wing tips. In pure bending, there is little doubt that the wings are amply strong, and it appears probable that the figure 12, given as the factor of safety, relates to pure bending only.



The Hanriot school machine, type H.14.

The undercarriage, also a Duralumin structure, is of somewhat unusual design, inasmuch as there is a set of struts forming a letter N in side view, linking the lower portion of the undercarriage to the *fuselage*. These "N's," however, are reinforced by a single strut on each side, running from the shock-absorber attachments to the main spar of the top plane, at the point where this is attached to the *fuselage*. It will thus be seen that the long single struts do not lie in the same plane as that of the "N" struts, and a form of triangulation, as seen in front view, is obtained. This accounts for the fact that there is no transverse wire bracing in the undercarriage. A small wing section encloses the transverse tubes and axle of the chassis. The axle does not run right through, but is divided, a short length of fixed tube resting inside the fairing, with two short axles hinged to its ends. From the axle hinges wires run to the *fuselage* fitting on the lower *longeron*, at the point where the lower plane front spar is attached.

Whatever one may think of the design of the Hanriot "H.26," especially as regards its wing structure, the workmanship is excellent, and the finish, made complete by some form of spraying with metal, above even the high average French standard.

The main characteristics of the Hanriot "H.26" are:—Length o.a., 7·35 ms. (24 ft. 2 ins.); span, 9 ms. (29 ft. 6 ins.); height, 2·5 ms. (8 ft. 3 ins.); wing area, 18 sq. ms. (194 sq. ft.); weight, empty, 820 kgs. (1,800 lbs.); weight of fuel (3 hrs.), 180 kgs. (396 lbs.); useful load, 80 kgs. (176 lbs.); total loaded weight, 1,080 kgs. (2,372 lbs.); power loading, 9·14 lb./h.p.; wing loading, 12·25 lb./sq. ft. Estimated performance: Maximum speed near ground, 260 kms. (161 miles) per hour; speed at 2,000 ms. 255 kms. (158 miles) per hour; ceiling, 8,500 ms. (28,000 ft.).

F. KOOLHOVEN, ROTTERDAM

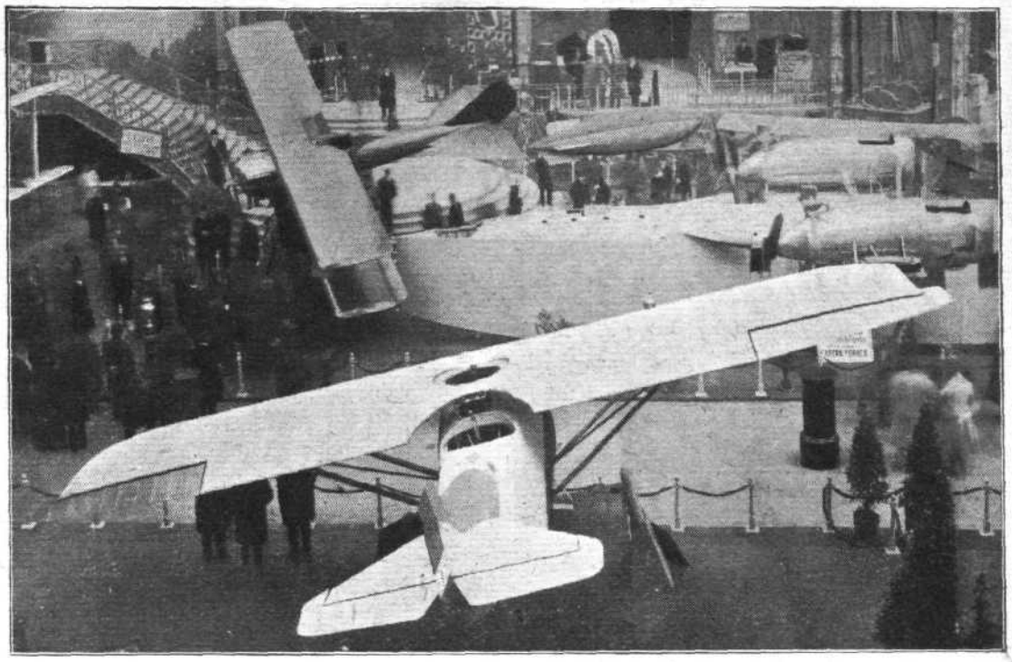
AFTER having been away from active participation in aircraft construction for several years, Mr. F. Koolhoven made his re-entry into aviation at the Paris Salon with a small parasol monoplane two-seater fighter, the "F.K.31." Having succeeded in forming a company in Holland, known as the N. V. Nationale Vliegtuig Industrie, of Rotterdam, one of the directors of which is Colonel Wallaardt Sacre, who built-up and was head of the Dutch Air Service, Mr. Koolhoven had but a few weeks in which to build his machine, and even then strikes in certain departments delayed matters considerably. Consequently, the finish of the "F.K.31" was not all that it might have been, but when one is told that the machine was built in three weeks, the lack of finish may easily be forgiven.

The "F.K.31," as already stated, is a parasol monoplane two-seater fighter, the chief object of the designer having been to obtain a good view and a free field of fire for both pilot and observer, as well as great manœuvrability. The former has resulted in the choice of the parasol monoplane design, and the latter in a high-lift wing-section, giving a small overall size without unduly putting up the landing speed.

In the machine exhibited, the *fuselage* was of metal construction, while the wing was of wood. In future editions, however, we understand that probably the wing also will be of metal construction. The *fuselage*, which is of approximately rectangular section, although slightly rounded, is built-up of steel tubes, braced by tie-rods. From an external view, it might be concluded that the main *fuselage* structure is very deep. This is not, however, the case, as much of the depth is made up of light stringers and formers, placed outside the main framework.

The rear portion of the *fuselage* is covered with fabric, while in front the covering is in the form of aluminium sheet, the attachment of which to the *fuselage* structure is by a few bolts, the heads of which are of streamline shape and form handles. By undoing a few of these, the entire covering on both sides of the front portion can be removed, exposing the internal framework for inspection or overhaul. The operation of removing the covering occupies but a few minutes.

The pilot's cockpit is in front, and access to it is gained by removing a sliding panel on the side of the *fuselage*. A circular opening in the wing enables the pilot to look either over or under the plane, the central portion of which is thinned down for the purpose. Immediately behind the pilot's cockpit is that of the observer or gunner. This cockpit is divided into two separate compartments, one of which contains the gunner's seat, gun mounting, etc., while the other accommodates the wireless, photographic apparatus, etc. The gun mounting is unusual, and incorporates a sloping telescopic tube, with a spring which just balances the weight of the guns. By releasing a catch, the guns can be swung rapidly in any direction, elevated or depressed, and this with a minimum of exertion on the part of the gunner. As the trailing edge of the wing is cut away in the centre, the gunner obtains a particularly free field of vision,



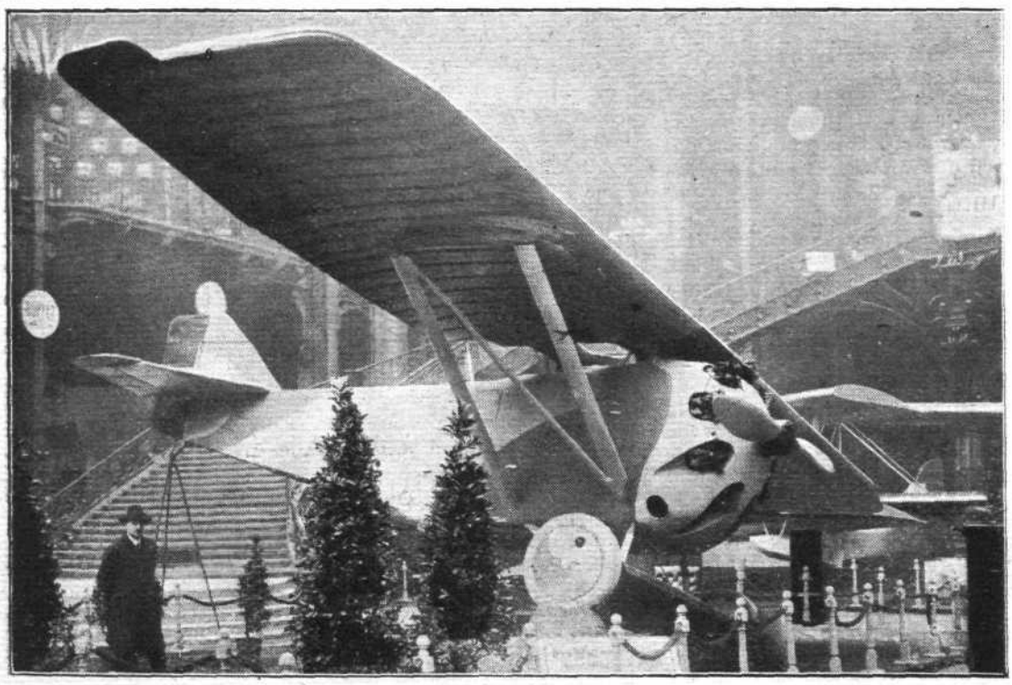
A Study in Angles : In the foreground the Koolhoven F.K.31. Beyond this machine can be seen, also mounted as if on a banked turn, one of the Nieuport biplanes. The large fuselage in the middle is that of the Astra-Torres airship, a small scale model of which is also shown. This particular view of the F.K.31 gives an excellent idea of the manner in which the cockpits are arranged.

while he can also fire his gun in almost any direction. One of our photographs, taken from the gallery, gives a very good idea of this feature of the " F.K.31."

In the nose of the machine, enclosed in a circular cowl, is mounted the 400 h.p. Bristol " Jupiter " engine, on one of the swivelling mounts standardised for this engine. In the " F.K.31 " there is no spinner, the engine cowling having been designed to avoid the extra complications. The cylinder heads project, through small openings in the cowl, and scoops are provided for the passage of air. The petrol tanks are mounted in the wing, so that direct gravity feed is obtained, simplifying considerably the petrol system and reducing the danger of fire by getting the tanks well away from the engine.

The wing, as already mentioned, is built-up of wood ribs on wood spars, but in subsequent machines probably the wing structure also will be made of steel. The wing section used is of the Schoukowsky type, with the maximum lower camber far back, and the centre of pressure also farther back than is usual in the more normal wing sections. The wing is braced on each side by a pair of struts, a diagonal strut serving to complete the structure. Except for the portion near the tips the wing is parallel throughout, and the horn balanced *ailerons* are remarkable for having a smaller chord at the tip than at the root.

The undercarriage of the " F.K.31 " is of unusual type, and somewhat reminds one of the Dornier machines. A small auxiliary plane is supported from the *fuselage* on two pairs of V-struts. These do not, however, run right out to the ends of the auxiliary plane, but are attached to it a couple of feet from the end. Inside the plane is a form of box spar, split vertically at the ends, into which the two short wheel axles are passed. The hinges occur at the point of attachment of the chassis struts to the spar. An unusual feature of the suspension is that the rubber shock-absorbers are wound around the ends of the spar, and that the axle, with its spool, is thus surrounded by the rubber cord. When the load comes on the wheel, the axle moves up against the rubber, which stretches, and in so doing, contracts the two halves of the split end of the box spar until the sides of the latter touch the axle spool. On the rebound the same occurs, the whole arrangement acting in the same manner as the Houdaille shock-absorber on an automobile. The wheel track is extremely wide, and the particular arrangement of the

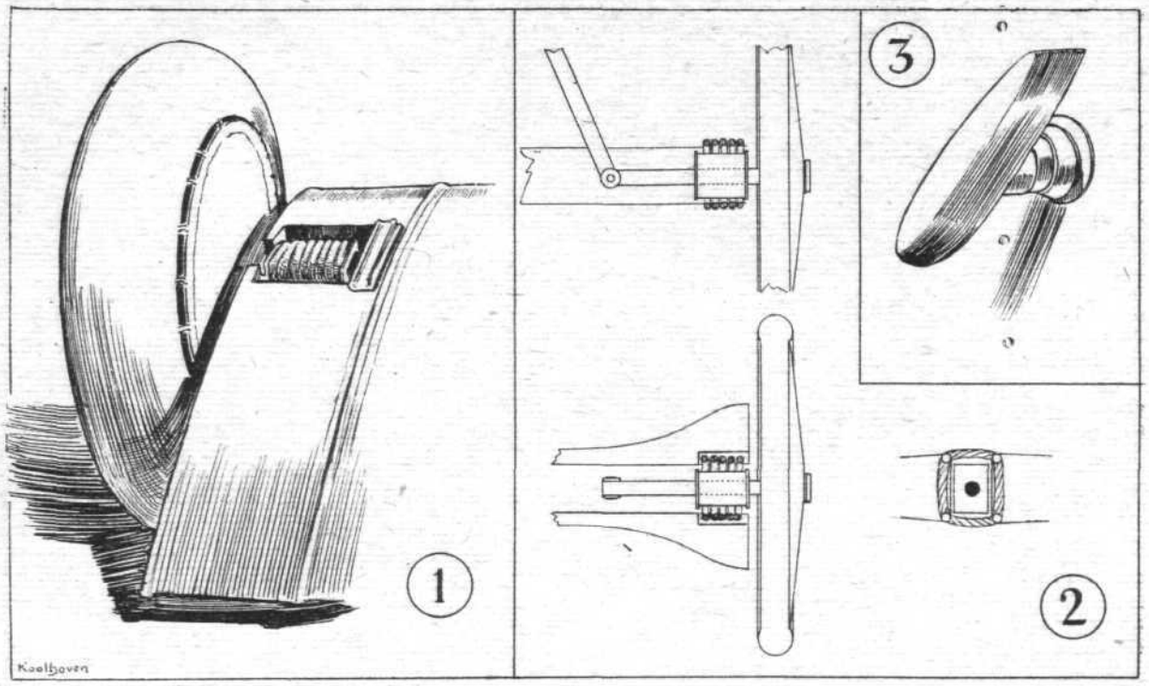


The Koolhoven F.K. 31, with Bristol " Jupiter " engine: Owing to the fact that the machine is a monoplane, and to the arrangement of the cockpits, both pilot and gunner have a particularly unobstructed view in all directions.

undercarriage chosen does not, Mr Koolhoven informs us, work out at all heavy.

The main characteristics of the " F.K.31 " are as follows :— Length o.a., 7·2 ms. (23 ft. 7 ins.) ; span, 11 ms. (36 ft. 2 ins.) ; chord, 2·4 ms. (7 ft. 10 ins.) ; wing area, 27·5 sq. ms. (296 sq. ft.) ; weight, empty, 1,800 lbs. ; military load, 1,500 lbs. ; total loaded weight, 3,300 lbs. It should be noted that the military load is 45 per cent. of the total weight. Maximum speed at 1,000 ms., 255 kms. (158 miles) per hour ; landing speed, 57 m.p.h. ; service ceiling, 26,250 ft. ; power loading, 8·25 lb./h.p. ; wing loading, 11·15 lbs./sq. ft.

(To be continued.)



THE KOOLHOVEN F.K. 31 : Some constructional details : 1. External view of shock absorber and axle fairing. 2. Diagrams of shock absorbing gear, which is so arranged that the axle is totally surrounded by the rubber. The outer end of the axle box is split, so that when the load comes on the wheel the rubber presses the sides of this box together, forcing them against the spool on the axle, thus acting as a brake. This action takes place both when the wheel rises under load and when it recoils after a bump, so that the arrangement acts as a damper gear. 3 shows one of the streamline handles which hold the fuselage covering in place. By undoing two of these handles on each side the entire side covering can be removed, exposing the internal structure for inspection or repair.

PERSONALS

Married

Capt. NEVILL MALCOLM KEMSLEY, A.F.C., son of Mrs. C. Kemsley, and the late Mr. James Kemsley, South Africa, was married on January 6, at St. Mary's Church, Beddington, to NORAH ELIZABETH, only daughter of Mrs. F. E. MADGE, of Walton House, Wallington, and the late Mr. William Friend MADGE.

The marriage was celebrated very quietly on Saturday, December 30, at St. Anselm's Church, W., of Capt. JOHN ARCHIBALD REDVERS BULLER, late K.R.R.C. and R.A.F., son of the late Rev. E. H. Buller and of Mrs. Seymour, of Roche de Lion, Gorey, Jersey, and HILDA MARJORIE, daughter of the late HENRY WARD PRICE and of Mrs. WARD PRICE, of 14, Hanover Square, W.

To be Married.

The engagement is announced of JOHN CHARLES FRANCIS HOLLAND, D.F.C., R.E., son of Sir Thomas and Lady Holland, of 6, Wetherby Gardens, S.W. 5, and NANCY, daughter of Sir JAMES and Lady BRUNYATE, of Butler's Green House, Cuckfield, Sussex.

The engagement is announced of GEORGE LEONARD ROBINSON, D.S.O., chaplain, R.A.F., son of the late Rev. Joseph Robinson, and CAROLYN THRELFALL, widow of Colin Stafford Threlfall, and youngest daughter of the late THOMAS TUNNICLIFF, of Manchester.

Killed.

Flying Officer EDWARD ERIC TURNER, D.F.C., who was killed in action in India on December 28, aged 26, was the only child of Mr. and Mrs. Edward Turner, late of Forest Hill.

Item.

The will of the late Lieut.-Col. GEORGE NIXON BIGGS, R.A.M.C. (T.) and R.A.F., of Wimpole Street, Cavendish Square, W., formerly surgeon-in-charge of the Dreadnought Hospital, Greenwich, who died on November 10 last, aged 41, has been proved at £4,404.

R.A.F. Cadetships

THE Civil Service Commissioners have declared the following to be the successful candidates at the competitive examination held in November last for admission to the Royal Air Force Cadet College, but their admission is conditional on their having passed the medical examination. The number of marks in each case is shown in brackets in the list below, and a table of marks will be sent to each candidate as soon as possible :—

*J. H. McN. Campbell (10,233), *S. H. V. Harris (9,018), G. B. Beardsworth (8,567), *A. H. Montgomery (8,314), *G. W. Hayes (7,851), *N. C. Walker (7,244) *K. H. Treseder (7,177), *D. W. Burridge (7,104), *J. G. Franks (6,899), A. H. Willetts (6,857), G. R. Beamish (6,564), *P. R. G. Bernard (6,537), B. A. C. Danbury (6,439), *I. M. Scott (6,289), *G. F. G. Cox (5,739), N. S. Allinson (5,583), J. R. Addams (5,052), *R. J. A. Ford, (5,043).

King's Cadet who has qualified.—M. E. de L. Hayes (6,960).

* These candidates have received marks for military efficiency.

Bombing Mahsud Rebel Tribesmen

DURING December last successful punitive air operations were carried out against the Jalal Khel Mahsud rebels in West Punjab, India, resulting in many casualties and damage to their flocks and property. Ahmadwam Towers were bombed and rendered uninhabitable, and also Guri, Khel and Gareri. The Jalal Khels, who have caused considerable trouble in the past and have hitherto refused to come to terms, are now seeking peace.

FLIGHT

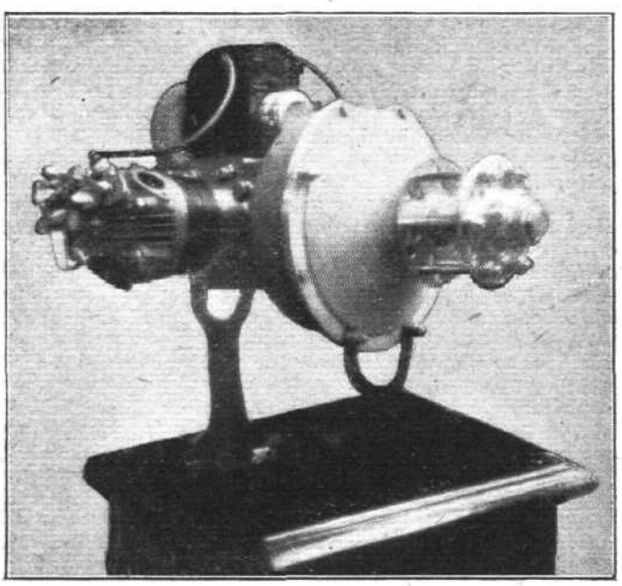
GLIDING, SOARING AND AIR-SAILING

Those wishing to get in touch with others interested in matters relating to gliding and the construction of gliders are invited to write to the Editor of FLIGHT, *who will be pleased to publish such communications on this page, in order to bring together those who would like to co-operate, either in forming gliding clubs or in private collaboration.*

THE performance of the French pilot, Lieut. Thoret, in flying for 7 hrs. 3 mins. at Biskra on a Hanriot school machine —H.D.14, with 80 h.p. le Rhône engine—is a very fine one, considering that the machine was somewhat heavily loaded, regarded as a glider. Normally, the H.D.14 two-seater school machine carries a wing loading of approximately 22·5 kgs./sq. m. (4·6 lbs./sq. ft.), but this is with pilot, passenger and fuel for 3 hrs. Without the passenger, and with but a small amount of fuel in the tanks, it may be assumed that the loading had been reduced to about 19 kgs./sq. m. (3·9 lbs./sq. ft.), but even this loading, although light for an aeroplane, would be very heavy for a glider. Then there is the fact that the machine itself would scarcely be very efficient, with its numerous wires and struts, not to mention an undercarriage which included another large quantity of struts and wires.

* * *

THE lesson to be drawn from the flight is that, given fairly efficient gliders, it should be possible for a skilled pilot to remain aloft as long as he liked, or could stand it for physical reasons. It appears probable that an efficient glider would be able to reach very considerable altitudes above the hills, and thus the feat of "sitting on a jet of air" might be turned into something vastly more useful by allowing the pilots to glide across country until meeting another upward current. To continue going for duration records by cruising backwards and forwards like the shuttle of a loom will not teach us anything which we do not already know, although there is little doubt that many pilots will still be anxious to try their hand at establishing new world's records for duration, whether or not such a feat is anything beyond a sporting effort. Scientific interest it can no longer claim.



A 10 H.P. LE RHONE ENGINE : At the Paris Aero Show the exhibits on the stand of Gnome and le Rhône included a small two-cylinder opposed air-cooled engine, intended for use on gliders. The engine, which is an A.B.C. built at the le Rhône works, is provided with a reduction gear of 3 to 1. The engine runs at 3,500 revolutions per minute, and the airscrew at about 1,170 revolutions per minute. The bore and stroke are 68·5 mm. and 54 mm. respectively, and the weight, complete with magneto and carburettor, is 18 kgs. (40 lb.)

* * *

IT appears that Lieut. Thoret was sent to Algeria by the French Under-Secretary of State for Air, in order to study the conditions and select a site for the forthcoming gliding competition. The Hanriot H.D.14 was placed at his disposal by the Algiers air station, and after a few preliminary flights, accompanied by his mechanic, Thoret succeeded in establishing his record. The French are usually fond of disclaiming any "records" until they have been homologated. In this case, we have not noticed that they hesitated in proclaiming Thoret's performance a record, although it appears extremely doubtful that it will ever be homologated, as probably no official observers were present.

* * *

WE do not, for one moment, doubt that Lieut. Thoret did remain up with engine stopped, for the time stated. He is an officer and a gentleman, and a very good sportsman besides, but the same can truthfully be said of General Mitchell of the U.S. Air Service, yet up to the very end of last year the French journals never tired of writing about General Mitchell's flight in doubting terms. That wonderful performance has now been homologated, as have also those of Lieut. Maughan, which eclipsed the flight records over 100 and 200 km. previously held by Lecointe and Brac-Papa.

* * *

AFTER this little digression, we may return to Lieut. Thoret's flight. It appears that he had made preliminary flights during January 1 and January 2, and that on the morning of January 3, he took off about 7. He found, however, that he could not remain up with engine stopped, and therefore came down and waited until about 9 a.m., when he got away again, the wind having increased and also, presumably, the sun beginning by then to cause ascending currents. This time, Thoret found no difficulty in remaining aloft, although he was blown about a good deal, and at times feared he would be blown against the rocky sides of the hill in front of which he was "weaving." This hill rises to a height of about 225 ms. (740 ft.), and is situated 5 miles south-west of Biskra.

* * *

THE greatest difficulty which Lieut. Thoret experienced appears to have been that of keeping warm, and also of fighting-off fatigue. He had to be constantly on the alert, and the controls were in use practically the whole time. In a statement to *Le Matin*, Thoret said that he was sorely tempted to quit, when he had beaten Maneyrol's performance by 10 mins., but, realising that, as he had no experts to count the seconds for him, he would have to beat Maneyrol by hours he kept on. He landed shortly after 4 in the afternoon, having been up for 7 hrs. 3 mins. Had he been more warmly clad, there is little doubt that Thoret might easily have remained up considerably longer.

* * *

ALTHOUGH not definitely decided yet, it appears probable that the French gliding competition at Biskra will take place from January 20 to the early part of February. The experiments made by Lieut. Thoret have definitely indicated that suitable soaring and gliding conditions may be expected to be met with, and already two machines have been entered, one by Thoret and the other by Adjutant Descamps. Thoret's machine will, we believe, be designed and built by Hanriot's. It is expected that the next entrant will be Maneyrol.

* * *

IT is also probable that another meeting will take place in Africa, the place and time of which have not yet been announced.

* * *

WE were extremely sorry to learn of the accident which befell the Sayers-Courtney-Wright glider at Itford. It appears that the wind blew down the tent in which the machine was housed, and succeeded in making a fairly complete wreck of it. It is to be hoped that another will be built, as the machine should, once the initial minor difficulties have been overcome, prove a highly efficient one. The short flight made some time ago in still air demonstrated that the gliding angle was very good indeed, while the rate of descent was extremely low, the machine appearing to hang in the air at a speed as low as 18 m.p.h. With the larger ailerons better lateral control is obtained, and the longitudinal control is already very good. We sincerely sympathise with Sayers, Courtney and Wright, and trust that they will be able to continue the experiments of which this glider was the first step.

METAL AEROPLANES

Résumé of Professor Junkers' Paper read before R.Ae.Soc.

CONSIDERABLE disappointment was felt at the Royal Aeronautical Society on January 4, when it was announced that, unfortunately, Professor Hugo Junkers would not be able to read his paper personally as, owing to illness, he was prevented from travelling to this country. He had, however, sent as special messenger with the manuscript and lantern slides of his paper, Herr Ingenieur Mierzinsky, who is consulting engineer at the Dessau works of Professor Junkers, and confidential secretary to the well-known German constructor. The paper had been translated into English by Mr. W. J. Stern, of the Air Ministry Laboratory, South Kensington, who also read the paper. Considering that Mr. Stern had only received the original German manuscript the day before the lecture, he acquitted himself very creditably indeed of a very difficult task, especially in view of the fact that, as he pointed out, he was not an expert on metal construction. Professor Leonard Bairstow was in the chair, and after a brief statement of the reasons which had prevented Professor Junkers from being present called on Mr. Stern to read his paper.

In his introductory remarks, Mr. Stern stated that he thought the best plan would be for him to confine himself mainly to the matter relating to the illustrations, as the paper would be published in full in the *Aeronautical Journal*. He thought, however, that the introductory remarks of Professor Junkers would be of interest, and consequently read them. Professor Junkers in his lecture attributed to the invitation to him to read a paper before the Royal Aeronautical Society the deeper meaning of a token of amiable disposition as between nation and nation, and saw in it an effort to renew the ties of genuine humanity and to extinguish the sad traces of a devastating war by hoisting the flag of peaceful competition.

In describing the method by which he had arrived at his all-metal aeroplane, Professor Junkers pointed out the importance of close co-operation between research and production, and between science and commerce. Before proceeding to the construction of all-metal machines, Professor Junkers had a number of experiments carried out in the wind tunnels at Aachen and Dessau, among the subjects being wing sections of varying camber, but of the same thickness, different angles of trail, thin sections and thick sections. A number of slides were shown, from which the result was arrived at that a certain thick section was, at small angles, equal to a thin section in efficiency, and at large angles equal to a deeply cambered thin section, forming, so to speak, an envelope curve around the curves representing the other two types of section.

Slides were shown illustrating the first Junkers all-metal machine, the J.1, which was built in six months. In this machine, Mr. Stern said, iron tubes were used, and also iron covering. Presumably, this was merely a slip on the part of the translator, and should have been steel tube. Slides were also shown of loading tests of a number of tubes, from which it was found that short thick-walled Duralumin tubes reached the theoretical figure, while thin-walled long tubes did not, until Professor Junkers had some tubes made in which longitudinal corrugations reduced the tendency to secondary flexure and a figure approaching the theoretical was reached.

Mr. Stern also quoted from the paper references to the early conviction of Professor Junkers that for efficiency all detrimental resistance should be suppressed, and slides made from patent specifications showed some rather unusual designs in which the passengers were accommodated inside the wings. A number of suggested designs were shown, mostly very large machines, as Professor Junkers was of the opinion that only in large sizes could the combination of all-metal construction and the suppression of ordinary fuselages be successfully attained.

A large number of slides were then shown, illustrating various Junkers machines, most of which were, however, familiar to all who follow aviation at all closely, as they had been published in various journals from time to time during the last three or four years. Among them was a picture of the Junkers armoured biplane, a specimen of which was at one time on view at the Agricultural Hall, Islington. Others illustrated the "Annelise" type, which has become known chiefly owing to the activities of John Larsen in America. Similar Junkers monoplanes fitted with floats were also shown.

The Chairman (Professor Bairstow), before opening the discussion, said that the paper and illustrations had been of very great interest, and had certainly shown several things which were unconventional from our point of view. He was referring chiefly to the aerodynamic features, about which he knew more than he did about constructional principles. He then declared the paper open for discussion, and hoped that many would take part in it.

Mr. F. Handley Page expressed his thanks to Professor Junkers for having agreed to come over here and give us the benefit of his experience. He (Mr. Handley Page) caused considerable amusement by stating that the first Junkers machine which he saw was one which had crashed in landing, the fuselage having broken in a rather unfortunate place. The name Junkers had been painted on its sides, and the break had occurred just behind the k, so that when he walked around the machine to attempt to find out what it was he read the letters "Junk." A closer inspection, however, revealed the fact that the machine had, in the main, stood up to the crash fairly well. As regards the paper there were one or two things in it which had surprised him. Thus, he was somewhat astonished to find the curve representing the thick aerofoil forming an envelope to the curves of thin sections and deeply cambered sections. This did not appear to tally with our results, and he would like to know something more about the manner in which the result had been arrived at, where the tests were carried out, what was the size of the model, and at what air speed was the test run.

As regards the statement made in the paper that the Duralumin covering did not deteriorate, Mr. Handley Page stated that some time ago he had an opportunity of examining some Junkers machines in America, and there the covering was certainly showing signs of corrosion. Turning to the statement that the Junkers machines in Colombia were fitted with Duralumin floats, he rather thought that the pictures indicated that the floats were wood, and he had an idea that, as a matter of fact, it was found that the Duralumin floats gave trouble owing to water leaking in between joints, and so forth. He concluded by thanking Professor Junkers for his paper.

Major F. M. Green said he was very interested to learn about the use Professor Junkers had made of Duralumin, and pointed out that in this country we had less faith in that material, and that, as a matter of fact, our constructors were forbidden by the Air Ministry to use Duralumin for any parts likely to be highly stressed. As most of the parts of an aeroplane were highly stressed, this meant that to all intents and purposes we were not using Duralumin in the construction, preferring to use instead high-tensile steel. He was sorry that so few data had been given in the paper, or, at any rate, in that portion of it which Mr. Stern had read, and hoped that more data would be found in the complete paper. With regard to the statement made that the climb of the Junkers J.13, with six passengers, was a record performance, he would like to know what engine was fitted, as he did not think the performance was anything out of the ordinary.

Mr. Stern, in replying, stated that with regard to Mr. Handley Page's questions, the tests on aerofoils were carried out by Prandtl at Göttingen, and that, no doubt, the figures could be verified. As regards the question of the use of wood floats on the Junkers machines in Colombia, he did not think it was specifically stated in the paper that these were of Duralumin. He himself had thought that they were. He had no doubt that Professor Junkers would be pleased to furnish any additional data desired. The engine fitted in the J.13 was a B.M.W. over-dimensioned super-compressed engine of 185 h.p.

A hearty vote of thanks was then passed, both to Professor Junkers and to Mr. Stern and Herr Ingenieur Mierzinsky.

As the paper as read on January 4 was considerably abbreviated, we would advise readers desiring to read the complete paper, as well as any discussion in writing thereof, to obtain a copy of the *Aeronautical Journal* for February, in which the paper will be published in full.

In connection with Professor Junkers' paper, it is of interest to note that permission has been obtained for one of the latest types of Junkers machines to fly to Croydon, in order to give an opportunity for detailed inspection of the construction. The machine is expected to arrive in the course of the next few days, and persons wishing to visit Croydon for the purpose of inspecting the machine should apply to the Secretary, Royal Aeronautical Society, 7, Albemarle Street, Piccadilly, London, W. 1.

FLIGHT

THE ROYAL AIR FORCE

London Gazette, December 29, 1922

General Duties Branch

The following are transferred to the Reserve, Class B :—Flying Offr. W. Parkinson ; December 30. Observer Offr. E. M. Greenwood ; December 23.

Memorandum

The permission granted to L. F. A. Taylor to retain his rank is withdrawn on his joining the Army.

London Gazette, January 2, 1923

General Duties Branch

Wing Comdr. (actg. Group Capt.) R. D. S. Stoney, C.B.E. (Staff Paymr. and Lieut.-Col., R.A.P.C.), relinquishes his temp. commn. on retirement from Army, and is granted rank of Col. R.A.F. ; Jan. 2. Sqdn. Ldr. H. L. Jackson, C.B.E. (Paymr. Lieut.-Cdr., R.N.), relinquishes his temp. commn. on return to Naval Duty ; Jan. 1. Flying Offr. (hon. Flight Lieut.) W. A. Berry (Capt., Ret. Pay List, Army), relinquishes his temp. commn. on ceasing to be empld. ; Jan. 1.

London Gazette, January 5, 1923

General Duties Branch

Flying Offr. W. K. Mercer is granted perm. commn. in rank stated ; Oct. 24, 1919 (since promoted). *Gazette*, Oct. 24, 1919, apptg. him to short service commn. is cancelled.

Stores Branch

Flight Lieut. W. Burkinshaw is placed on Retd. List on acct.of ill-health ; Jan. 3.

Chaplains' Branch

The Rev. J. Black, O.B.E., M.A., is granted hon. commn. as Chaplain, with relative rank of Squadron Leader ; Dec. 15, 1922.

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NOTICES TO AIRMEN

Aerodromes for Civil Use : Consolidated List

1. AERODROMES, Seaplane Stations and landing grounds, open to civil aviation in the United Kingdom, and Service and Civil stations, available to civil aircraft in case of emergency only, are shown in consolidated lists (A to E) which have been corrected to January 1, 1923, and are obtainable from the Air Ministry.

2. The lists are classified as follows, each aerodrome or landing ground being given in alphabetical order :

List A. : Government-owned Aerodromes available for civil flying at which accommodation exists.—(*a*) Civil Aerodromes. (*b*) Service Stations.

List B. : Aerodromes available for civil machines in emergency only.*—(*a*) Permanent Service Stations. (*b*) Stations temporarily retained for Service purposes. (*c*) Civil Stations.

List C. : Licensed Civil Aerodromes.—Civil Aerodromes licensed for all types.

List D. : Unlicensed Private Aerodromes.—Aerodromes available for civil machines only by special permission of the owners, or in emergency.

List E. : Emergency Landing Grounds.—Unless otherwise indicated, no accommodation for aircraft exists at these stations.

3. *Customs Stations.*—The only aerodromes at which Customs facilities exist at present are *Croydon* and *Lympne*.

4. It should be clearly understood that these lists are purely provisional, and are subject to alteration from time to time. Such amendments are published periodically as "Notices to Airmen."

5. In those cases in which it is stated that accommodation does not exist, no facilities other than the actual landing grounds are available.

6. No guarantee can be given at the present time that personnel to handle aircraft is available either at the Service Stations or at the Civil licensed aerodromes.

7. Notice to Airmen No. 107 of the year 1922 is cancelled.

(*No.* 1 *of* 1923.)

* N.B.—The Aerodromes in Section (a) *Permanent Service Stations* and Section (b) *Stations temporarily retained for Service purposes*, except aerodromes which are within a prohibited area (*e.g.*, Gosport), may be used, until further notice, in addition to cases of real emergency :—

(i) For refuelling in the course of journeys where no civil facilities exist.

(ii) For landing of passengers proceeding to a destination near the aerodrome concerned.

No guarantee can be given that any R.A.F. transport will be available, or that the machine can be housed in such cases

Where possible, notice of intention to use any such aerodrome should be given in advance to the Officer Commanding.

Belgium : Ostend Aerodrome.

IT is hereby notified :—

During the wet season, the landing area at Ostend aerodrome is restricted along the N.E. (adjoining the cemetery) and S.E. sides by a strip about 70 yards wide.

Until further notice, therefore, pilots should avoid these edges of the ground.

(*No.* 3 *of* 1923.)

London-Brussels : Official Air Route Directions

1. *Official Routes.*—With reference to the Air Navigation Order, 1922, Schedule IV, Section III, para. 31, which requires, as from July 11, 1922, that :—"In following an officially recognised air route every aircraft when it is safe and practicable, shall keep to the right side of such route," the following have been defined as the officially recognised routes between London and Brussels :—

(*a*) *Southern Route.*—Between :—Croydon and Oxted, no official route ; Oxted and Folkestone, the main railway line through Edenbridge, Tonbridge and Ashford ; Folkestone and Calais, no official route ; Calais and Brussels (Haren), the main railway line through St. Omer, Hazebrouck, Armentières, Lille, Tournai, Ath and Hal.

The portion of this route between Tournai and Brussels has been established by Belgian Regulations dated September 25, 1922.

(*b*) *Northern Route* (*Direct*).—Between :—Croydon and Calais, as in (*a*) ; Calais and Deynze, the main railway line through Dunkerque, Furnes, Dixmude and Thielt ; Deynze and Alost, no official route ; Alost and Brussels, the main railway line.

(*c*) *Northern Route* (*via Ostend*).—Machines having to land at Ostend *en route* for Brussels should proceed as follows :—Between :—Croydon and Furnes, as in (*b*) ; Furnes and Ostend, the canal running through Nieuport ; Ostend and Alost, the main railway line through Bruges and Ghent ; Alost and Brussels, as in (*b*).

2. *Aerial Corridor.*—The Franco-Belgian frontier on the southern route must be crossed between Armentières and Baisieux.

3. *Rules of the Air.*—The supplementary rules of the air which have been agreed upon by the British, French and Belgian Governments, as notified in para. 2 of Notice to Airmen No. 64 of 1922, apply to aircraft flying on the above routes.

4. *Erratum.*—The first three lines of para. 1 of Notice to Airmen No. 64 of 1922, are cancelled and the following substituted :—"With reference to the Air Navigation Order 1922, Schedule IV, Section III, para. 31, which requires, as from July 11, 1922, that ".

(*No.* 5 *of* 1923.)

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The Flight Around the World

IT begins to look as if there is going to be considerable competition for the honour of being the first to circle the globe by air during the present year. Sir Keith Smith, who with his brother, the late Sir Ross Smith, was to have made the attempt last year but for the very regrettable accident which resulted in the death of Sir Ross and Lieut. Bennett, has just returned to this country after an eight months' tour around the world, during which he has inspected most portions of the route he intends to follow in his attempt this year. Sir Keith will use a Vickers Viking with Napier "Lion" engine, being still convinced that this is the ideal type of machine for the flight. The route to be followed by Sir Keith and his assistants will be approximately the same as that planned for last year's attempt, and it is hoped that a start will be made towards the end of April.

Mr. Alan Cobham, the well-known de Havilland pilot, intends to make an attempt on the D.H.9 with 230 h.p. Siddeley "Puma" engine. This type of machine has already, piloted by Cobham, some remarkable flights to its credit, such as a tour of Europe, a flight from London to Casablanca and back to Venice, and a number of others. For the flight around the world, which Cobham intends to commence some time in March, floats will be dispatched to Shanghai, Vancouver, and Toronto. Naturally some of the stages will be very difficult, such as the long oversea passages from Japan to Canada and from Canada or Newfoundland to Europe. Cobham will, however, probably take the southern route over the Atlantic, *via* the Azores. He is hoping to make the trip in a little over two months.

Finally, there is the proposed attempt by Messrs. Macintosh, Tymms, and McCloughry, who will use a Fairey twin-float seaplane with Rolls-Royce "Condor" engine. The date of the start of this team has not yet been announced, but it will probably be approximately at the same time as the start of the other two. Thus the flight may very well turn into a race to be first round, which would add very materially to the public interest in the event. As all three teams have organised their attempts very thoroughly, there is every chance that at least one of them will get through.

LONDON TERMINAL AERODROME

Monday Evening, January 8, 1923

PASSENGERS have fallen-off again now that the holidays are definitely over, and this week's total has fallen to quite a low level in comparison with recent weeks. This is particularly marked on the Manchester-London-Amsterdam route, and also on the London-Cologne air line, while even the Handley Page service to Paris has not been as well patronised as is usual on this line.

The weather has interfered, to some extent, with the regularity of the services, and on Tuesday the only service to be run was the Daimler line from Manchester to London—all the continental services being cancelled owing to fog at Lympne. In spite of the progress made in civil aviation, we are not yet past the stage when a small patch of fog over one portion of the route shuts down the services completely—although the rest of the route may be normal from a weather point of view.

On Thursday, Maj.-Gen. Brancker, Brig.-Gen. Festing and Col. Edwards arrived at the aerodrome, and went for a flight in the all-metal German Dornier machine. The German Ambassador was also in evidence, and several other notabilities. As usual with General Brancker, the flight was arranged for 9 a.m. and the first Press photographer arrived on the scene about 11 o'clock, just in time to get pictures of the departure of the machine on its way back to Germany.

Rumours that Failed to Materialise

THERE were persistent rumours during the week that we were to have a visit from another German all-metal machine—in this case one of Herr Junker's monoplanes, which, it was stated, was to fly to London in connection with Herr Junker's lecture to the Royal Aeronautical Society. At the time of writing, however, this machine has not materialised.

I understand that Messrs. Vickers are fitting one of the Vickers "Vulcans" of the Instone Air Line with a Napier "Lion" engine, in place of the present engine, in order to give the machine a bit more speed, and to enable it to get off, when fully loaded, with a shorter run. In the meantime, the Instone service between London and Cologne is being run entirely with De Havilland stock. In view of the fact that the aerodromes at Brussels are in such a bad state, a stop is now made at Ostend for the convenience of passengers for Belgium. This makes the journey to Cologne slightly longer, but the extra mileage is insufficient to interfere to any great extent with the time-table.

The Big French Airway Combine

THE amalgamation of the French firms is now complete, and the entire French service is being run under the control of the C.M.A. air lines, although the personnel of the Grands Express is still giving a helping hand. I am told that the Franco-Roumanian Co. are also in the amalgamation, which, if so, makes the French combine probably the biggest and most powerful in existence.

The strong winds and gales are continuing to play havoc with the time-tables, making some journeys remarkably rapid, and flights in the opposite direction long-drawn-out. On Friday, Mr. Shaw, who was flying the Marconi Co.'s experimental "Avro," which is fitted with a 90 h.p. R.A.F. engine, was up in a gale of wind, and, while attempting to fly over Purley, head-to-wind, he was unable to make any headway for half an hour. In fact, at the end of 30 mins., he estimated that he had been blown back a distance of about 25 yards. As the wind was increasing, he decided to alight, and, diving down, he succeeded in gaining enough headway to turn and alight on the aerodrome with his engine full on.

Further additions have been made to the departure and arrival platform by pushing out a couple of concrete pathways into the sea of mud, and making two square platforms at the head of these paths for passengers to alight on. If we get much more rain, and all machines make for these platforms, it may be necessary to dig out the machines after they are loaded, for the mud around them is already like a quagmire.

Pilots, by the way, flying between London and Manchester, are now reporting—from their point-view aloft—further very evident extensions of the flooded areas.

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Air Mail Stamps and Correspondence

THE Editor of FLIGHT invites correspondents throughout the world to send him letters (addressed to 36, Great Queen Street, Kingsway, London) by their national or local air mails. These will have special and personal acknowledgment in the Editorial columns of FLIGHT, and help to encourage the more general use of the air for mail carrying. The Editor would also greatly appreciate any items of interest or news relating to air mail services and air stamps.

Night Flying Tests

IT is probable that next month the Air Ministry will carry out further night-flying experiments on the London–Paris route, this time under regular service conditions. We understand a D.H. 9 will be used for these trials.

American World's Speed Record Homologated

THE speed record made by General Mitchell, of the American Air Service, on October 18 last year, when he attained a speed of 224·58 m.p.h. has now been homologated by the International Aeronautical Federation.

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PUBLICATIONS RECEIVED

War and Peace. No. 4. "Phalanx" Verlag, Schillstr. 15, Berlin.

Malaises des Aviateurs. By Dr. Perrin de Brichambaut and P. Behague. Librairie Gauthier-Villars, 55, Quai des Grands-Augustins, Paris. Price 1 fr.

Report on the Economic Conditions in Cuba, September, 1922. By G. Haggard, O.B.E. H.M. Stationery Office, Kingsway, W.C. 2. Price 9*d.* net. By post 10*d.*

Report on Economic and Financial Conditions in the British West Indies, June 30, 1922. By A. W. H. Hall. H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s.* net. By post 1*s.* 1½*d.*

Report on the Financial and Economic Conditions of the Argentine Republic, September, 1922. By H. O. Chalkley. H.M. Stationery Office, Kingsway, W.C. 2. Price 1*s.* 6*d.* net. By post 1*s.* 7½*d.*

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AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motor

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

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24,065. ENGLISH ELECTRIC CO., LTD., and W. O. MANNING. Seaplanes. (190,211.)
24,220. M. GOLEIN. Aeroplanes. (190,220.)
25,009. D. J. MOONEY. Metal aeroplane wings. (190,254.)

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17,601. J. C. BARKER. Supporting-planes. (190,506.)
24,807. W. HAUPT. Flying-machines. (169,966.)
25,046. B. B. KEITH. Toy Airships. (190,530.)
27,278. H. O. SHORT. Aeroplanes. (190,576.)
27,521. D. J. MOONEY, E. E. BROWN and D. H. EMBY. Metal framework for aircraft. (190,579.)

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4,160. R. LEPARMENTIER. Variable-pitch screw propellers. (190,663.)

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